WIND-DRIVEN POWER-PLANT TOWER

BACKGROUND OF THE INVENTION

[0001] Modern wind-driven power-plants are predominantly designed to rest on tubular towers, in particular steel tube towers, because this design, termed shell design, is the simplest and most economical. Regarding large wind-driven power-plants having rotor diameters of more than 70 m and towers of heights in excess of 80 m, their output power being more than 1.5 megawatt, the critical engineering limitation is the required tower diameter at the tower base. Towers of diameters larger than 4.3 m can be transported only with difficulty because frequently the clearance underneath bridges would not allow going through the underpass. Moreover the total length and weight of such towers demands subdividing them into several tower sections that are bolted to each other by annular flanges. In addition to transportation costs, such large annular flange connection means entail considerable costs when very large wind-driven power-plants (3 - 5 Mw) are involved.

[0002] In view of the difficulties in transportation, concrete towers are used increasingly, being manufactured either at the erection site of the wind-driven power-plant or else consisting of smaller components that will be bonded and braced together. Both types of towers however entail higher manufacturing costs than tubular steel towers. As a result hybrids of steel pipes and concrete are sometimes built, of which the upper tower is as much as possible a steel pipe tower and only the lower tower segment, of which the diameter is too large for transportation, is made of con-